

Refine Search

Search Results -

Term	Documents
COMPILER\$1	0
COMPILER	29334
COMPILERA	1
COMPILERE	1
COMPILERS	8134
COMPILER1.	1
COMPILER/	1
COMPILER:	1
COMPILER]	6
(15 AND COMPILER\$1).PGPB,USPT,EPAB,JPAB,DWPI,TDBD.	0
(COMPILER\$1 AND L15).PGPB,USPT,EPAB,JPAB,DWPI,TDBD.	0

Database:

US Pre-Grant Publication Full-Text Database
 US Patents Full-Text Database
 US OCR Full-Text Database
 EPO Abstracts Database
 JPO Abstracts Database
 Derwent World Patents Index
 IBM Technical Disclosure Bulletins

Search:

L16

Refine Search

Recall Text

Clear

Interrupt

Search History

DATE: Thursday, November 02, 2006 [Purge Queries](#) [Printable Copy](#) [Create Case](#)

Set Name **Query**
side by side

Hit Count **Set Name**
result set

DB=PGPB,USPT,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=OR

L16 compiler\$1 and L15

0 L16

L15 information\$1 and L13

1 L15

<u>L14</u>	subset\$1 and L13	0	<u>L14</u>
<u>L13</u>	non-object-oriented and L5	1	<u>L13</u>
<u>L12</u>	method\$1 and L9	0	<u>L12</u>
<u>L11</u>	method\$1 and L19	70	<u>L11</u>
<u>L10</u>	device\$1 and L9	0	<u>L10</u>
<u>L9</u>	non-object and l1	1	<u>L9</u>
<u>L8</u>	device\$1 and L2	0	<u>L8</u>
<u>L7</u>	network near5 device and L2	0	<u>L7</u>
<u>L6</u>	non-object and L5	0	<u>L6</u>
<u>L5</u>	method\$1 and L4	1	<u>L5</u>
<u>L4</u>	device\$1 and L1	1	<u>L4</u>
<u>L3</u>	receiv\$5 near3 non-object and L1	0	<u>L3</u>
<u>L2</u>	non-object and L1	1	<u>L2</u>
<u>L1</u>	6219673.pn.	2	<u>L1</u>

END OF SEARCH HISTORY



STIC Search Report

EIC 2100

STIC Database Tracking Number: 206390

TO: Yves Dalencourt
Location: RND 4A89
Art Unit: 2157
Thursday, November 02, 2006

Case Serial Number: 09632294

From: Byron T. Mims
Location: EIC 2100
RND-4B19
Phone: 272-3528

byron.mims@uspto.gov

Search Notes

Yves

Enclosed are art findings that may be of interest. Let me know if there is anything in particular that you would like for me to pursue further.

Byron

Set	Items	Description
S1	248183	DATABASE? OR DATABANK? OR DATA() (BASE? ? OR BANK? ? OR FILE? ? OR REPOSITOR? OR WAREHOUSE?) OR DB OR RDB OR OODB OR ODBC OR DBMS
S2	1172	MIB OR MANAG?() INFORMATION?() (BLOCK? OR BASE? ? OR NETWORK-?)
S3	39	S1:S2 (5N) ("NOT" OR NO OR WITHOUT OR NON) (2N) OBJECT?() ORIENT?
S4	0	S3 (7N) (FRACTION? OR PART??? OR PORTION? OR SUBSET? OR FRAGMENT? OR PIECE? OR SEGMENT? OR DETAIL?)
S5	0	S3 (7N) (DELIVER? OR SEND??? OR SENT OR UPLOAD? OR DISTRIBUT? OR TRANSFER? OR TRANSMI? OR BEAM???)
S6	15	S3 (7N) (RECEIV? OR ACCEPT? OR ACQUIR? OR OBTAIN? OR DOWNLOADED? OR PULL???() DOWN?? OR PROCUR??? OR GET? ? OR FETCH??? OR RETRIEV? OR ACCESS?)
S7	8	S5:S6 (7N) (OBJECT?() ORIENT?) (5N) (INTERFACE? ? OR APP OR APPS OR APPLICATION? OR APPARAT? OR DEVICE? OR GUI OR GUIS)

File 350:Derwent WPIX 1963-2006/UD=200670

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File 347:JAPIO Dec 1976-2006/Jan(Updated 061009)

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7/69,K/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX
(c) 2006 The Thomson Corporation. All rts. reserv.

0010856009 - Drawing available
WPI ACC NO: 2001-474812/
Related WPI Acc No: 1998-520716
XRPX Acc No: N2001-351406

Data structure for use in object-oriented computer systems, has generic persistent datastore defined by generic database description, associated

with non-object oriented datastore

Patent Assignee: INT BUSINESS MACHINES CORP (IBMC)

Inventor: BLACKMAN K R; HOWE J L

Patent Family (1 patents, 1 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update
US 6219673	B1	20010417	US 1996738105	A	19961025	200151 B
			US 199874247	A	19980507	

Priority Applications (no., kind, date): US 1996738105 A 19961025; US 199874247 A 19980507

Patent Details

Number	Kind	Lan	Pg	Dwg	Filing Notes
US 6219673	B1	EN	14	7	Continuation of application US 1996738105
					Continuation of patent US 5809509

Alerting Abstract US B1

NOVELTY - A generic persistent datastore, is defined by a generic database description, associated with the **non - object - oriented** datastore (114) and is **accessed** by **application** programs. Persistent datastore stores datastore persistent objects defined by persistent object class. The objects encapsulates data from the non-object-oriented datastore, and are materialized in the computer for access by the programs.

DESCRIPTION - A bridge program interfaces the application programs to the non-object-oriented datastore and translates common elements between the objects and the data stored in the database. The data encapsulated by the objects is concurrently shared between object oriented and non-object-oriented applications.

USE - For use in object-oriented computer systems, for accessing non-object oriented datastores.

ADVANTAGE - The need for writing non-object-oriented code to access the non-object-oriented datastore is minimized by generating object classes by a datastore class definition tool. Provides a bridge that interfaces between an application program and a non-object database management system, to provide persistent storage for objects manipulated by application program.

DESCRIPTION OF DRAWINGS - The figure shows the block diagram illustrating the operating of the class definer tool.
114Non-object-oriented datastore

Title Terms/Index Terms/Additional Words: DATA; STRUCTURE; OBJECT; ORIENT;
COMPUTER; SYSTEM; PERSISTENT; DEFINE; DATABASE; DESCRIBE; ASSOCIATE; NON

Class Codes

International Classification (Main): G06F-017/30

File Segment: EPI;

DWPI Class: T01

Manual Codes (EPI/S-X): T01-F07; T01-J05B; T01-J05B2B; T01-J14

...NOVELTY - A generic persistent datastore, is defined by a generic **database** description, associated with the **non - object - oriented** datastore (114) and is **accessed** by **application** programs. Persistent datastore stores datastore persistent objects defined by persistent object class. The objects encapsulates...

7/69,K/2 (Item 2 from file: 350)
DIALOG(R) File 350:Derwent WPIX
(c) 2006 The Thomson Corporation. All rts. reserv.

0010313549 - Drawing available
WPI ACC NO: 2000-627666/200060
Related WPI Acc No: 1998-480751
XRPX Acc No: N2000-465011
**Data retrieval apparatus for non-object oriented datastore, retrieves data
from datastore on request from application program, as objects
accessible
by application program**

Patent Assignee: INT BUSINESS MACHINES CORP (IBMC)
Inventor: BLACKMAN K R; HOWE J L
Patent Family (1 patents, 1 countries)

Patent			Application			
Number	Kind	Date	Number	Kind	Date	Update
US 6081808	A	20000627	US 1996736762	A	19961025	200060 B
			US 199874928	A	19980506	

Priority Applications (no., kind, date): US 1996736762 A 19961025; US
199874928 A 19980506

Patent Details

Number	Kind	Lan	Pg	Dwg	Filing Notes
US 6081808	A	EN	13	6	Continuation of application US 1996736762
					Continuation of patent US 5799313

Alerting Abstract US A

NOVELTY - A bridge program (110) interfaces between an application program (104) and non-object oriented datastore (114). Data retrieved from the datastore are materialized as objects that can be accessed by application program, in response to query request from application program.

DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

- 1.computerized method of data retrieval;
- 2.program product

USE - For object oriented access to non-object oriented datastore, using client-server configurations, database management system.

ADVANTAGE - The data retrieved from the datastore is encapsulated or wrapped.

DESCRIPTION OF DRAWINGS - The figure shows the block diagram illustrating the operation of the block.

- 104 Application program
- 110 Bridge program
- 114 Non-object oriented datastore

Title Terms/Index Terms/Additional Words: DATA; RETRIEVAL; APPARATUS; NON;

OBJECT; ORIENT; REQUEST; APPLY; PROGRAM; ACCESS

Class Codes

International Classification (Main): G06F-017/30

File Segment: EPI;

DWPI Class: T01

Manual Codes (EPI/S-X): T01-F07; T01-J05B3; T01-J05B4P; T01-S03

Original Publication Data by Authority

Original Abstracts:

...computerized system in accordance with the principles of the present invention includes a "bridge" that **interfaces** between an **application** program and a **non - object - oriented database** management system to materialize data **retrieved** from the **non - object - oriented database**

management system as objects that can be manipulated by the **application**

program. The bridge includes a "collection of object collections" for modeling hierarchical structures, a datastore...

7/69,K/3 (Item 3 from file: 350)
DIALOG(R)File 350:Derwent WPIX
(c) 2006 The Thomson Corporation. All rts. reserv.

0010313499 - Drawing available
WPI ACC NO: 2000-627616/
Related WPI Acc No: 1998-413612
XRPX Acc No: N2000-464961
Data retrieval for non-object oriented datastore, involves
encapsulating
data retrieved incrementally from non-object oriented database in one
or
more objects of datastore collection with limited number of objects
Patent Assignee: INT BUSINESS MACHINES CORP (IBMC)
Inventor: BLACKMAN K R; HOWE J L
Patent Family (1 patents, 1 countries)
Patent
Number Kind Date Number Kind Date Update
US 6078927 A 20000620 US 1996738294 A 19961025 200060 B
US 199874929 A 19980506

Priority Applications (no., kind, date): US 1996738294 A 19961025; US
199874929 A 19980506

Patent Details

Number	Kind	Lan	Pg	Dwg	Filing Notes
US 6078927	A	EN	15	7	Continuation of application US 1996738294.
					Continuation of patent US 5781907

Alerting Abstract US A

NOVELTY - Data are incrementally retrieved from a non-object-oriented
datastore (114) into a computer. The retrieved data are encapsulated in
one

or more objects of a datastore collection (300) which has specified
number

of objects. Some objects are deleted from the datastore collection when
additional data is requested.

DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

1.computerized apparatus for retrieving data from non-object oriented
datastore;

2.program for data retrieval

USE - For information management system (IMS) TM database management
system for accessing non-object oriented datastore.

ADVANTAGE - Since the data stored in non-object oriented database
are
encapsulated in objects, the object oriented application program can
manipulate that data efficiently.

DESCRIPTION OF DRAWINGS - The figure shows the block diagram of the
database collection of bridge which interfaces object oriented program
and

then non-object oriented database.

114 Non-object-oriented datastore

300 Datastore collection

Title Terms/Index Terms/Additional Words: DATA; RETRIEVAL; NON; OBJECT; ORIENT; ENCAPSULATE; INCREMENT; DATABASE; ONE; MORE; COLLECT; LIMIT; NUMBER

Class Codes

International Classification (Main): G06F-017/30

File Segment: EPI;

DWPI Class: T01

Manual Codes (EPI/S-X): T01-J05B3; T01-J05B4C

Original Publication Data by Authority

Original Abstracts:

...computerized system in accordance with the principles of the present invention includes a "bridge" that **interfaces** between an **application** program and a **non - object - oriented database** management system to materialize data **retrieved** from the **non - object - oriented database** management system as objects that can be manipulated by the **application** program. The bridge includes a datastore collection comprised of a specified number of datastore persistent...

7/69,K/4 (Item 4 from file: 350)
DIALOG(R)File 350:Derwent WPIX
(c) 2006 The Thomson Corporation. All rts. reserv.

0008929597 - Drawing available
WPI ACC NO: 1998-480751/199841
Related WPI Acc No: 2000-627666
XRPX Acc No: N1998-375143
Computerised apparatus for accessing non-object oriented data using object oriented techniques - retrieves data from non-object oriented database by making bridge program to be executed by computer
Patent Assignee: INT BUSINESS MACHINES CORP (IBMC)
Inventor: BLACKMAN K R; HOWE J L
Patent Family (1 patents, 1 countries)
Patent Application
Number Kind Date Number Kind Date Update
US 5799313 A 19980825 US 1996736762 A 19961025 199841 B

Priority Applications (no., kind, date): US 1996736762 A 19961025

Patent Details

Number	Kind	Lan	Pg	Dwg	Filing	Notes
US 5799313	A	EN	13	6		

Alerting Abstract US A

The apparatus has an external non-object oriented database stored in a data storage device of a computer. A bridge program is executed by the computer to retrieve data from the database.

The retrieved data is encapsulated in one or more database persistent objects. These objects are materialized as members of database collector

(300) accessible by application program (104).

ADVANTAGE - Improves bridging technique between non-object oriented database and object oriented application program.

Title Terms/Index Terms/Additional Words: COMPUTER; APPARATUS; ACCESS; NON;

OBJECT; ORIENT; DATA; TECHNIQUE; RETRIEVAL; DATABASE; BRIDGE; PROGRAM; EXECUTE

Class Codes

International Classification (Main): G06F-017/30

File Segment: EPI;

DWPI Class: T01

Manual Codes (EPI/S-X): T01-J05B4C; T01-J05B4P

Original Publication Data by Authority

Original Abstracts:

...computerized system in accordance with the principles of the present invention includes a "bridge" that interfaces between an application

program and a non - object - oriented database management system to materialize data retrieved from the non - object - oriented database management system as objects that can be manipulated by the application program. The bridge includes a "collection of object collections" for modeling hierarchical structures, a datastore...

7/69,K/5 (Item 5 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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0008866115 - Drawing available
WPI ACC NO: 1998-413612/
Related WPI Acc No: 2000-627616
XRPX Acc No: N1998-321978

Computer based accessing method for non-object oriented database - involves storing data retrieved from data storage device into computer memory as specified number of database objects

Patent Assignee: INT BUSINESS MACHINES CORP (IBMC)

Inventor: BLACKMAN K R; HOWE J L

Patent Family (1 patents, 1 countries)

Patent			Application			
Number	Kind	Date	Number	Kind	Date	Update
US 5781907	A	19980714	US 1996738294	A	19961025	199835 B

Priority Applications (no., kind, date): US 1996738294 A 19961025

Patent Details

Number	Kind	Lan	Pg	Dwg	Filing Notes
US 5781907	A	EN	14	7	

Alerting Abstract US A

The method involves **retrieving** the data from an external **non - object oriented database** (114), of a data storage **device** (116). The retrieved data is written into the memory of the computer to which the data storage device is attached.

The retrieved data is stored as several database objects which constitute a database collection. The number of database objects is limited to a specified number.

ADVANTAGE - Avoids restriction to client server configuration.
Enables application to main frames, microcomputers or personal computers also.

Title Terms/Index Terms/Additional Words: COMPUTER; BASED; ACCESS; METHOD;

NON; OBJECT; ORIENT; DATABASE; STORAGE; DATA; RETRIEVAL; DEVICE; MEMORY;
SPECIFIED; NUMBER

Class Codes

International Classification (Main): G06F-017/30

File Segment: EPI;

DWPI Class: T01

Manual Codes (EPI/S-X): T01-J05B3; T01-J05B4B; T01-J05B4M

Alerting Abstract ...The method involves **retrieving** the data from an external **non - object oriented database** (114), of a data storage

device (116). The retrieved data is written into the memory of the computer to which the...

Original Publication Data by Authority

Original Abstracts:

...computerized system in accordance with the principles of the present invention includes a "bridge" that **interfaces** between an **application** program and a **non - object - oriented database** management system to materialize data **retrieved** from the **non - object - oriented database**

management system as objects that can be manipulated by the **application**

program. The bridge includes a datastore collection comprised of a specified number of datastore persistent...

7/69,K/6 (Item 6 from file: 350)
DIALOG(R) File 350:Derwent WPIX
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0007759287 - Drawing available

WPI ACC NO: 1996-384080/199638

Efficient retrieval method of data spread throughout large object oriented databases - involves providing tracking agent instrumentation for obtaining data and designating tracking agent information within object oriented database to return request to service layers

Patent Assignee: INT BUSINESS MACHINES CORP (IBMC)

Inventor: HUGHES E T; KNUDSON R L; MARLIN J W; RUEHLE T M; STUART A F

Patent Family (1 patents, 1 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update
US 5546577	A	19960813	US 1994334592	A	19941104	199638 B

Priority Applications (no., kind, date): US 1994334592 A 19941104

Patent Details

Number	Kind	Lan	Pg	Dwg	Filing Notes
US 5546577	A	EN	18	12	

Alerting Abstract US A

The method involves providing a management interface within the Desktop Management Interface (DMI) to receive a request for data from a management application. A service layer is provided within the DMI to issue a DMI function call to address an object oriented database with a request.

Data needed for a particular request is obtained with tracking agent instrumentation.

A designation of the tracking agent information is provided in the object oriented database so that the request is returned to the service layer for passing the particular request to the tracking agent instrumentation. A component interface passes the request to the tracking agent as though it were component instrumentation and receives data developed by the database instrumentation. The management interface passes the developed data to the management application.

USE/ADVANTAGE - Selection of underlying database manager varies from implementation to implementation and is transparent to management application requesting access.

Title Terms/Index Terms/Additional Words: EFFICIENCY; RETRIEVAL; METHOD;

DATA; SPREAD; OBJECT; ORIENT; TRACK; AGENT; INSTRUMENT; OBTAIN; DESIGNATED; INFORMATION; DATABASE; RETURN; REQUEST; SERVICE; LAYER

Class Codes

International Classification (Main): G06F-017/00
(Additional/Secondary): G06F-019/00

File Segment: EPI;

DWPI Class: T01

Manual Codes (EPI/S-X): T01-F07; T01-J05B3; T01-J05B4

Original Publication Data by Authority

Claims:

...said DMI for managing hardware and software components, said DMI providing for component instrumentation to **obtain** data from components

without searching said **object - oriented database**, said method comprising the steps of: /br providing a management **interface** within said

DMI to receive a request for data from said management application; /br providing a...

7/69,K/7 (Item 7 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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0007584804 - Drawing available

WPI ACC NO: 1996-201043/199620

XRPX Acc No: N1996-168660

Non-object structured data integrating appts for database management system

- provides transparent interface to external data stores which accesses data via ODBMS and manipulates data in foreign data stores which include

external data that is converted into objects

Patent Assignee: ONTOS INC (ONTO-N)

Inventor: HARRIS C S; MARTEL P A

Patent Family (4 patents, 18 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update
WO 1996010232	A1	19960404	WO 1995US2549	A	19950302	199620 B
US 5542078	A	19960730	US 1994315394	A	19940929	199636 E
EP 783738	A1	19970716	EP 1995912665	A	19950302	199733 E
			WO 1995US2549	A	19950302	
JP 11502330	W	19990223	WO 1995US2549	A	19950302	199918 E
			JP 1996511704	A	19950302	

Priority Applications (no., kind, date): US 1994315394 A 19940929

Patent Details

Number	Kind	Lan	Pg	Dwg	Filing Notes
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WO 1996010232	A1	EN	116	10	
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National Designated States,Original: JP

Regional Designated States,Original: AT BE CH DE DK ES FR GB GR IE IT LU

MC NL PT SE

US 5542078	A	EN	39	10	
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EP 783738	A1	EN			
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PCT Application WO 1995US2549

Based on OPI patent WO 1996010232

Regional Designated States,Original: DE FR GB

JP 11502330	W	JA	122		
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PCT Application WO 1995US2549

Based on OPI patent WO 1996010232

Alerting Abstract WO A1

The appts. includes a storage manager responding to an ODBMS application

interface and an external data store (22) interface. The storage manager

has an interface with several constructs including objects, references, indices, extensions and transactions, and facilitates the handling of the

constructs to communicate with the ODBMS (20) interface to transfer structures.

An integral mapper receives some constructs and maps them to second constructs to transform the data structures to non-object structured data

to store in the external data store, and to transform non-object structured

data to object data structures for use by an object application. A

second

interface between the mapper and the data store has several second interface constructs and handles them to communicate the transfer of the

non-object structured data between the storage manager and the external data store.

ADVANTAGE - Accesses and effectively integrates **non = object oriented** data stores with object **applications** . Preserves existing **database** and file system while permitting shift to **object oriented applications** .

Title Terms/Index Terms/Additional Words: STRUCTURE; DATA; INTEGRATE; APPARATUS; DATABASE; MANAGEMENT; SYSTEM; TRANSPARENT; INTERFACE; EXTERNAL
; STORAGE; ACCESS; MANIPULATE; FOREIGN; CONVERT; OBJECT; OBJECT; DATABASE
; MANAGEMENT; SYSTEM

Class Codes

International Classification (Main): G06F-012/00, G06F-017/30

File Segment: EPI;

DWPI Class: T01

Manual Codes (EPI/S-X): T01-J05B; T01-J20A

Alerting Abstract ...ADVANTAGE - Accesses and effectively integrates

non = object oriented data stores with object **applications** .

Preserves

existing **database** and file system while permitting shift to **object oriented applications** .

7/69,K/8 (Item 8 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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0006071837 - Drawing available

WPI ACC NO: 1992-310143/

XRPX Acc No: N1992-237397

Relational database data access system - has interface communicating with

requestor object in object-oriented environment and relational database outside object-oriented environment

Patent Assignee: INT BUSINESS MACHINES CORP (IBMC)

Inventor: BAKER R B; CAVENDISH C J; SITZE K L

Patent Family (4 patents, 4 countries)

Patent			Application			
Number	Kind	Date	Number	Kind	Date	Update
EP 504085	A1	19920916	EP 1992480017	A	19920211	199238 B
US 5212787	A	19930518	US 1991668001	A	19910312	199321 E
EP 504085	B1	19990623	EP 1992480017	A	19920211	199929 E
DE 69229453	E	19990729	DE 69229453	A	19920211	199936 E
			EP 1992480017	A	19920211	

Priority Applications (no., kind, date): US 1991668001 A 19910312

Patent Details

Number	Kind	Lan	Pg	Dwg	Filing Notes
EP 504085	A1	EN	9	3	
Regional Designated States,Original: DE FR GB					
US 5212787	A	EN	8	3	
EP 504085	B1	EN			
Regional Designated States,Original: DE FR GB					
DE 69229453	E	DE			Application EP 1992480017
					Based on OPI patent EP 504085

Alerting Abstract EP A1

The data processing system includes a requestor object in the object-oriented environment which sends a data access message. An interface communicates with the requestor object in the object-oriented environment

and the relational database outside of the object-oriented environment.

The interface has a mechanism for receiving the data access message from the requestor object, accessing the relational database, and returning a result to the requestor object.

ADVANTAGE - Accesses data in relational database without user having to exit object-oriented environment.

Equivalent Alerting Abstract US A

The method is for accessing a relational database outside of an object oriented environment without exiting the object-oriented environment. A requestor object located in the object oriented environment sends a data

access message requesting data located in a relational database outside of the object oriented environment.

The message is sent to an interface which creates a data object containing instance variables to hold results from the data access request.

The interface executes a data access routine and the results are placed into the data object with the results being sent to the requestor object by

sending the requestor object a pointer to the data object.

ADVANTAGE - Provides improved data access system.

Title Terms/Index Terms/Additional Words: RELATED; DATABASE; DATA; ACCESS;

SYSTEM; INTERFACE; COMMUNICATE; OBJECT; ORIENT; ENVIRONMENT

Class Codes

International Classification (Main): G06F-015/40, G06F-017/30

File Segment: EPI;

DWPI Class: T01

Manual Codes (EPI/S-X): T01-F07; T01-H07C; T01-J05B4

Original Titles:

...Method and apparatus for accessing a relational database without exiting an object - oriented environment...

...Method and apparatus for accessing a relational database without exiting an object - oriented environment...

...Method and apparatus for accessing a relational database without exiting an object - oriented environment